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AUTHOR Bean, John P.
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ABSTRACT

A model of student attrition was synthesized from psychological, sociological, and educational sources, and contains six sets of variables: background, organizational, personal, environmental, attitudinal, and intent to leave. The model was tested with 1,909 full-time and unmarried university freshmen at a major midwestern university. The sample was divided into four groups based on the student's sex and level of self-confidence, and multiple regression and path analyses were used to analyze the data from the study instrument. Background variables included father's education, mother's education, performance in high school, high school and home town size, and distance to home. Organizational variables included university grades, informal contact with faculty, centralization, memberships in campus organizations, finding the academic program competitive, courses, and absenteeism. Personal variables were goal commitment, major and occupational certainty, and confidence. Environmental variables included opportunity to transfer, likelihood of marrying, ease of financing one's education, and family approval of the institution. Attitudinal variables were loyalty, certainty of choice, satisfaction, and practical value. It was found that intent to leave and university grades were the best predictors of attrition; high confidence compensates for absenteeism and low grades in reducing dropping out. The correlation coefficients ranged from .43 to .53. For each of the four path analyses (high/low confidence women and high/low confidence men), intent to leave showed a consistently high positive relationship with dropping out, while university grades were negatively related to dropping out. Recommendations are presented, and the way that this model differs from those of Spady (1970) and Tinto (1975) is considered. (SW)

STUDENT ATTRITION, INTENTIONS, AND CONFIDENCE: INTERACTION EFFECTS IN A PATH MODEL PART I. THE 23 VARIABLE MODEL

JOHN P. BEAN

OFFICE OF INSTITUTIONAL RESEARCH AND PLANNING
ASSISTANT PROFESSOR OF EDUCATIONAL ADMINISTRATION
307 ADMINISTRATION BUILDING
UNIVERSITY OF NEBRASKA-LINCOLN
LINCOLN, NEBRASKA 68588

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ABSTRACT

A model of student attrition was synthesized from psychological, sociological and educational sources, and contains six sets of variables: background, organizational, personal, environmental, attitudinal, and intent to leave. The model was tested using 1909 university freshmen. Based on interaction effects, the sample was partitioned into high and low confidence men and women. R^2 for dropout ranges from .43 to .53. Intent to leave and university grades were the best predictors of attrition; high confidence compensates for absenteeism and low grades in reducing dropout. Other interactions are discussed, and practical suggestions made.

STUDENT ATTRITION, INTENTIONS, AND CONFIDENCE:
INTERACTION EFFECTS IN A PATH MODEL
PART I. THE 23 VARIABLE MODEL

Introduction

Of the better known theoretical models of student attrition (Spady, 1970; Tinto, 1975), neither uses a single organization at the unit of analysis. In addition, neither suggests the existence of interaction effects. Both of these models indicate that attrition is a longitudinal process, and that the student's interaction with the organization plays an important part in the decision to stay in or drop out of school. Pascarella (1980) developed a similar model which emphasized student-faculty informal interaction, identified educational outcomes as the immediate precursor of attrition, and demonstrated the difficulty of establishing a model which is recursive (i.e., has directional causality). In a period when demographic data suggest that freshmen enrollments will decline substantially, the importance of improving retention rates may become more a matter of institutional survival than of academic interest. The value of examining the findings from an empirical study based on a solid theoretical foundation--findings in which about half of the variance in attrition is accounted for--should be clear.

The purpose of this research is to conduct an investigation into the determinants of university freshman attrition. There are four main objectives to Part I of this study: (1) to describe the elements in a synthesized model of student attrition and how this model differs from those of Spady (1970) and Tinto (1975); (2) to test the explanatory power of the model; (3) to examine

the interaction effects produced by confidence; and (4) to ascertain the relative influence of the determinants in predicting student attrition. In practical terms, this study will attempt to identify some of the underlying causes of freshman attrition at a major land-grant university in the midwest. It is hoped that this study will contribute to the literature on student attrition by providing an empirical assessment of the simultaneous effects of the complex array of factors which past research has indicated contribute to a student's decision to drop out of school. In Part II of this study, the model is reduced to ten independent variables, and the total causal effects of each of these ten variables is examined in detail.

The Model

It should be noted at the outset that student attrition (a term used interchangeably with "dropout") is defined as the cessation of individual student enrollment in a particular institution. The unit of analysis in this research is that of a single institution. This study does not address broad economic concerns such as manpower production or sociological theories of status attainment. Instead, it focuses on the individual student's interaction with a particular institution, and thus is consistent with the empirical study of Rootman (1972) who used the "person-role fit" theory taken from Biddle and Thomas (1966).

The theoretical model used here is similar to the one described by Bean (1981), except that here, personal variables are seen as conceptually different from attitudinal variables. A description of the model, presented in Figure 1, follows.

Figure 1 about here

The theoretical model consists of the dependent variable dropout, and six sets of independent (exogenous and endogenous) variables in a causal sequence. Definitions of the variables appear in Table 1.

Table 1 about here

Background variables include father's education, mother's education, performance in high school, high school and home town size, and distance home. Chief support for the inclusion of these variables comes from the literature on status attainment, especially the work of Sewell, Hauser, and Featherman (1976) and Bean (1980). Spady and Tinto's models also include background variables. Organizational variables include university grades, informal contact with faculty, centralization, memberships in campus organizations, finding the academic program competitive, courses, and absenteeism. Variables were selected from the work of Price (1977) on turnover in work organizations, Bean (1980) in an application of Price's work in a student setting, and empirical tests of Tinto's model identified in Terenzini and Pascarella (1979). Three personal variables were included in the model. These were: goal commitment, major and occupational certainty, and confidence. Spady's and Tinto's models give great importance to goal commitment. Major and occupational certainty are located in the model in the same place as goal commitment, according to Bean (1979), and Bean and Creswell (1980). The inclusion of confidence is supported by the work of Bean (1979) and by Hutchinson and Johnson (1966). Four environmental variables are included in the model. These are opportunity to transfer, likelihood of marrying, ease of financing one's education, and family approval of the institution. This type of variable is not found in the models of Tinto and Spady, but comes from the turnover literature (cf. Price, 1977; Bean 1979). There are four attitudinal variables, which are expected to influence intent to leave. These four are: loyalty, certainty of choice, satisfaction, and practical value. Of these four, only satisfaction appears in the

Tinto/Spady models. The location of these three variables is based on the work of Locke (1976) and Fishbein and Ajzen (1975). These variables are expected to influence intent to leave. Intent is placed in the model according to the research of Fishbein and Ajzen (1975) as adapted by Bentler and Speckart (1979). According to their model, intentions are the product of attitudes, norms, and previous behavior, and intention preceeds subsequent behavior. Intention has also recently been shown to have the most important influence on dropout decisions in at least two studies (Bean, 1980; Johnson, 1980).

The main differences between this model and the Tinto/Spady models is the identification of specific organizational variables derived from studies of turnover in work organizations, the identification of personal variables as a separate category, the inclusion of environmental variables, the use of three attitudinal variables along with satisfaction where Tinto/Spady models only included satisfaction, and the replacement of "institutional commitment" with "intent to leave" as the immediate precursor of student attrition.

Methodology

To test this model of student attrition, an instrument, developed and pilot tested on three other campuses, was mailed to all freshmen registered at a major midwestern university during the Spring term of 1979 (N=4,045). The rate of return was 47 percent. From the 1,909 respondents, two homogeneous subsamples of 865 women and 693 men were used in the analysis. Homogeneous groupings were desired to eliminate the possible influence of confounding variables (Kerlinger, 1973). Only students who met the following criteria were included in the analysis: unmarried, full-time freshmen who were 21 years old or younger, who had not transferred from another institution and were U.S. citizens.

The instrument contained 98 items from which measures of 23 variables were obtained. The majority of these were Likert-like items based on a five-point scale which ranged from "a very small extent," scored 1, to "a very large extent," scored 5. Other questions asked for factual information, such as ACT scores, high school grades, and parents' educational level. Ten indices for variables were constructed through the use of factor analysis. (See Bean (1980) for a more detailed description of the procedures used in measurement and in data analysis.) Thirteen variables were measured through single-item indicators. Face validity was assumed for all measures. Concurrent and convergent validity was assessed through factor analysis for the multi-item indices, and was found to be adequate (Campbell and Fiske, 1959). The reliability of the multi-item indices was measured by Cronbach's coefficient alpha, and averaged .80, the level suggested by Nunnally for basic research (1967). Dropout was indicated by student records, with stopouts excluded from the analysis.[1] Information related variable measurements is found in Table 2.

Table 2 about here

The data were analyzed using multiple regression and path analysis. The data set was initially partitioned based on the respondents sex, as suggested by previous studies (Spady, 1971; Bean, 1980). Next, it was hypothesized that confidence would have a compensating effect in the influence of a variable on dropout. For example, a student with high confidence and high grades would be expected to remain in school, while a student with low confidence and low grades would show high potential for dropping out of school. Students with high confidence and low grades, however, would be less likely to drop out than students with low confidence and low grades, and thus confidence would be

expected to compensate for the effect of low grades on dropout. To test this hypothesis, the variables dropout and intent to leave were regressed on confidence and the variable with which it was expected to interact. In this way one could control for the main effects of independent variables. Next, the interaction term was added to the equation, which takes the form $\hat{Y} = b_1$ (Confidence) + b_2 (Variable) + b_3 (Confidence X Variable) + a, with (Confidence X Variable) as the interaction term. Using the univariate F-ratio, for women, ten of the interaction terms were found to be significant in the equation predicting dropout (confidence X intent, X close friends, X absenteeism, X family approval of the institution, X certainty of choice, X academic program competitive, X development, X difficulty of financing one's education, X university grades, and X performance in high school). For men, six of the interaction terms were found to be significant in the equation predicting dropout (confidence X absenteeism, X academic program competitive, X development, X helpfulness of advisor, X practical value, and X university grades). In addition, for women, twelve variables interacted with confidence when intent to leave was the dependent variable, and for men, eight variables interacted with confidence using intent to leave as the dependent variable. Since these interaction terms indicated that the assumption of additivity did not hold in the case of confidence and the other independent variables in the regression equations with either dropout or intent to leave as the dependent variable, the sample was further partitioned into high confidence men (HCM, N - 469) low confidence men (LCM, N = 224), high confidence women (HCW, N = 509), and low confidence women (LCW, N = 356). As indicated by Table 2, missing data was generally not a problem with this data set, and thus pair-wise deletion was used in the regressions. For this reason, the Ns reported in Tables 3 through 6 reflect the minimum pair-wise N, and are slightly smaller than the Ns reported here.

Results from Multiple Regression

The results for the multiple regressions indicated by the path model are found in Table 3 for high confidence women, Table 4 for low confidence women, Table 5 for high confidence men, and Table 6 for low confidence men. Discussion

Tables 3, 4, 5, and 6 about here

of these results will be divided into two sections. To begin with, the results for multiple regression for each of the four groups will be presented individually. Next, findings for the 23 independent variables for each of the four populations will be discussed.

Results for High Confidence Women (HCW)

Dropout. The twenty three independent variables accounted for 52.5% of the variance in dropout. The adjusted or "shrunken" R^2, written $\bar{R}^2$, adjusted for the degrees of freedom, was .501. Four of these 23 variables were significantly related to dropout at the $p \leq .05$ level or higher. (In the discussion here, unless otherwise indicated, the number which follows the variable indicates the path coefficient (beta weight, or standardized regression coefficient) between the independent variable and the dependent variable.) For high confidence women, for dropout, the most important predictor was intent to leave (.692), followed by university grades (-.132), high school and home town size (-.078), and opportunity to transfer (.076).

Intent to Leave. The 22 independent variables preceding intent to leave in the path model accounted for 37.2% of the variance in intent to leave ($\bar{R}^2$ = .342). In descending order of importance, the eight variables significantly related to intent to leave were: certainty of choice (-.314); loyalty (-.285); major and occupational certainty (.186); practical value (-.150); academic program competitive (-.119); performance (-.110); courses (-.099); and memberships

in campus organizations (-.095).

Practical value. Eighteen variables accounted for 22.1% of the variance in practical value ($\bar{R}^2$ = .190). In descending order of importance, the five variables significantly related to practical value were: courses (.212); major and occupational certainty (.163); family approval (.160); finding the academic program competitive (.156); and educational goals (.097).

Satisfaction. Eighteen variables accounted for 11.5% of the variance in satisfaction ($\bar{R}^2$ = .080). Three variables were significantly related to satisfaction. In descending order of importance, these were: educational goals (.175); courses (.157); and memberships in campus organizations (.114).

Loyalty. The eighteen independent variables accounted for 25.1% of the variance in loyalty, ($\bar{R}^2$ = .222). In descending order of importance, the five variables significantly related to loyalty were: opportunity to transfer (-.348); educational goals (.124); courses (.123); father's education (.107); and centralization (-.104).

Certainty of Choice. The eighteen independent variables account for 30.2% of the variance in certainty of choice, $\bar{R}^2$ = .275). In descending order of importance, the five variables significantly related to certainty of choice were: major and occupational certainty (.261); courses (.233); opportunity to transfer (-.204); family approval (.172); and centralization (-.082).

Results of Low Confidence Women (LCW)

Dropout. For low confidence women, 23 variables accounted for 47.0% of the variance in dropout ($\bar{R}^2$ = .430). Four of these variables were significantly related to dropout. The most important predictor was intent to leave (.555), followed by university grades (-.152); absenteeism (.126) and certainty of choice (.118).

Intent to Leave. The 22 independent variables predicting intent to leave

in the path model accounted for 46.9% of the variance in intent to leave ($\bar{R}^2$ = .431). In descending order of importance, the variables significantly related to intent to leave were: practical value (-.257); likelihood of marrying (.194); certainty of choice (-.176); loyalty (-.172); grades (-.142); opportunity to transfer (.132); satisfaction (-.119); father's education (-.099); and distance home (.094).

Practical Value. Eighteen variables accounted for 29.0% of the variance in practical value ($\bar{R}^2$ = .249). In descending order of importance, the four variables significantly related to practical value were: courses (.260); educational goals (.244); major and occupational certainty (.109); and family approval (.103).

Satisfaction. Eighteen variables accounted for 23.5% of the variance in satisfaction ($\bar{R}^2$ = .191). In descending order of importance, the four variables significantly related to satisfaction were: academic program competitive (-.260); courses (.210); absenteeism (-.201); and educational goals (.167).

Loyalty. The eighteen independent variables accounted for 13.5% of the variance in loyalty ($\bar{R}^2$ = .085). In descending order of importance, two variables were significantly related to loyalty. These were: opportunity to transfer (-.176) and educational goals (.137).

Certainty of Choice. The eighteen independent variables accounted for 32.6% of the variance in certainty of choice ($\bar{R}^2$ = .289). In descending order of importance, the variables significantly related to certainty of choice were: major and occupational certainty (.265); courses (.238); family approval (.153); and opportunity to transfer (.119).

Results for High Confidence Men (HCM)

Dropout. The 23 independent variables accounted for 42.9% of the variance

in dropout ($\bar{R}^2$ = .396). Five of the independent variables were significantly related to dropout. In descending order of importance, these were: intent to leave (.567); university grades (-.290); mother's education (-.115); satisfaction (.090); and likelihood of marrying (.082).

Intent to Leave. The 22 independent variables accounted for 29.0% of the variance in intent to leave ($\bar{R}$ = .252). Seven variables were significantly related to intent to leave. In descending order of importance, these were: certainty of choice (.-214); practical value (-.164); opportunity to transfer (.163); satisfaction (-.123); loyalty (-.113); major and occupational certainty (.105); and centralization (-.092).

Practical Value. The 18 independent variables accounted for 25.0% of the variance in practical value ($\bar{R}^2$ = .217). Five independent variables were significantly related to practical value. In descending order of importance, these were: courses (.225); educational goals (.180); opportunity to transfer (-.168); major and occupational certainty (.137); and academic program competitive (.110).

Satisfaction. The 18 independent variables accounted for 14.4% of the variance in satisfaction ($\bar{R}^2$ = .106). Four variables were significantly related to satisfaction. In descending order of importance, these were: educational goals (.219); contacts with faculty (.130); opportunity to transfer (-.123); and courses (.121).

Loyalty. The 18 independent variables accounted for 16.4% of the variance in loyalty ($\bar{R}^2$ = .217). Four variables were significantly related to loyalty. In descending order of importance, these were: opportunity to transfer (-.216); educational goals (.155); family approval (.140); and academic program competitive (.119).

Certainty of Choice. The 18 independent variables accounted for 31.4% of the variance in certainty of choice ($\bar{R}^2$ = .284). Five variables were significantly

related to certainty of choice. In descending order of importance, these were: major and occupational certainty (.264); courses (.219); family approval (.213); opportunity to transfer (-.319); and father's education (-.113).

Results for Low Confidence Men (LCM)

Dropout. The 23 independent variables accounted for 48.7% of the variance in dropout ($\bar{R}^2$ = .423). In descending order of importance, the six variables significantly related to dropout were: intent to leave (.441); university grades (-.277); absenteeism (.183); courses (.154); major and occupational certainty (.130); and centralization (.117).

Intent to Leave. Twenty-two variables accounted for 48.1% of the variance in intent to leave ($\bar{R}^2$ = .420). Seven variables were significantly related to intent to leave. In descending order of importance, these were: practical value (-.296); university grades (-.158); satisfaction (-.152); and educational goals (-.152); likelihood of marrying (-.132); academic program competitive (-.123); and contact with faculty (-.111).

Practical Value. Eighteen independent variables accounted for 29.4% of the variance in practical value ($\bar{R}^2$ = .227). In descending order of importance, the five independent variables significantly related to practical value were: educational goals (.272); courses (.171); academic program competitive (.156); family approval (.148); and centralization (.128).

Satisfaction. For low confidence men, satisfaction was not well explained by the eighteen independent variables. None was significantly related to satisfaction, and although the explained variance was .069, the adjusted $\bar{R}^2$ was -.019. Thus, this set of independent variables did little to explain satisfaction for low confidence men.

Loyalty. The eighteen independent variables accounted for 15.8% of the variance in loyalty ($\bar{R}^2$ = .078). Two variables were significantly related to

loyalty. These were family approval (.221) and opportunity to transfer (-.150).

Certainty of Choice. The eighteen independent variables accounted for 29.3% of the variance in certainty of choice (R^2 = .226). Four variables were significantly related to certainty of choice. In descending order of importance, these were: courses (.230); opportunity to transfer (-.218); major and occupational certainty (.213); and family approval (.144).

Background Variables. There were several significant paths from the background variables to the organizational, personal, and environmental variables. These paths were not included in Tables 3 through 6 because they were of little consequence--for only one variable (university grades) was more than 5% of the variance explained. This was the case for all four groups. Approximately 25% of the variance of university grades was explained for each group because of the correlation (averaging .515) between performance and university grades. Otherwise, the background variables contributed little to understanding of the organizational, personal, or environmental variables.

Independent Variables Lacking Significance in the Models. In the four path models developed for high and low confidence men and women, several variables appeared to be of little importance in the prediction of the important endogenous variables (dropout, intent to leave, practical value, satisfaction, loyalty, and certainty of choice) in the path model. For high confidence women, eight variables were not significantly related to these dependent or intervening variables in the path model: satisfaction, contacts with faculty, absenteeism, likelihood of marrying, difficulty of financing school, mother's education, and distance home. For low confidence women, seven variables were not significantly related to the dependent or intervening variables in the path model: centralization, memberships in campus organizations, difficulty of financing school, mother's education, performance, and high school and home

town size. For high confidence men, six independent variables were not significantly related to the dependent or intervening variables in the path model: memberships in campus organizations, absenteeism, difficulty of financing school, performance, high school and home town size, and distance home. For low confidence men, nine variables were not significantly related to the dependent or intervening variables in the path model: loyalty, certainty of choice, memberships in campus organizations, difficulty of financing school, mother's education, father's education, performance, high school and home town size, and distance home. These results indicate that the difficulty of financing school was not an important predictor in the path model, and the background variables, with the exception of the father's and mother's education, were also unimportant.

Discussion of the Contributions of the Individual Variables in the Path Model

The regressions presented in Tables 3 through 6 have two important implications. First, several of the independent variables had consistent effects on the endogenous variables in the models for the four groups. For example, intent to leave was the most important predictor of dropout, with a consistently high positive relationship. University grades was the second most important predictor in each case, and was negatively related to dropout. Opportunity to transfer had a consistent significant negative relationship with both loyalty and certainty of choice for all four populations. Such findings enhance the validity of the study, indicating that the influences in these four different tests of the model are not due to random effects. Second, the findings indicated that interaction effects were present where one variable was significantly related to a dependent variable in the regression for one population, but not for a second population. For example, for low confidence men and women, absenteeism had a significant positive relationship to dropout. For high confidence men and women, no such significant relationship existed. This finding indicates

that absenteeism interacted with confidence in influencing dropout. Along with the findings related to reliability and validity of the measures, it is assumed the independent variables represent population differences which are important in the understanding of the student attrition process. A discussion of these variables follows. B weights, or unstandardized regression coefficients, are used to compare the influence of an independent variable on a dependent variable when different populations are used in the regressions.

Intent to Leave. For all four populations, intent to leave was the best predictor of attrition, consistently significant at $p \leq .001$. The value of this finding is substantial. First, the finding lends credence to the Fishbein/Ajzen model (1975) which indicates that intention precedes behavior. In addition, of the four attitudinal variables in the model, only satisfaction for high confidence women, and loyalty and certainty of choice for low confidence men, were not significantly related to intention. Again, this finding supports the Fishbein/Ajzen hypothesis that attitudes significantly influence intentions.

For high confidence men and women, occupation and major certainty had a significant positive relationship to intent to leave (HCM, B = .113; HCW, B = .226), while no such relationship existed for low confidence men or women (LCM, B = -.028; LCW, B = .075). This finding was contrary to expectations. One would expect students who were certain of their major and occupation to remain in school. This finding might be explained by the way in which the variable was operationalized. That is, major certainty might lead to the necessity to transfer to an institution which provides a more substantial major in the specified area. In the case of occupational certainty, if the occupation chosen does not require a college degree, this situation might also lead to a more rapid leaving of the institution than would happen otherwise.

Practical Value. Practical value had a significant negative relationship

with intent to leave for all four groups. (HCW, B = .225; LCW, B = .338; HCM, B = .185; LCM, B = .332). This variable was the first, second, or third most important predictor of intent to leave for the four groups, relatively more important for low confidence men and women than for high confidence men and women. This variable seems to be one of the most important attitudes determining dropout for freshmen.

Satisfaction. Satisfaction has played a central role in models of leaving behavior (Price, 1977; Spady, 1970). In only one case (HCM) was satisfaction directly related to dropout. In three instances, satisfaction was significantly related to intent to leave (LCM, HCM, LCW). Among the four attitudinal variables, satisfaction was the least well explained. The $\bar{R}^2$ for satisfaction was .019 for LCM; .106 for HCM; .191 for LCW; and .180 for HCW. Only in the case of low confidence women was more than 11% of the variance explained. Courses had a positive significant relationship with satisfaction for high confidence men, low confidence women, and high confidence women. Educational goals also had a positive significant relationship with satisfaction for those three groups. Other variables uniquely related to satisfaction were different for each of these three groups.

Loyalty. Loyalty had a significant negative relationship with intent to leave for high confidence men, low confidence women, and high confidence women. Again, the amount of explained variance was below .13 except in the case of high confidence women ($\bar{R}^2$ = .222). For all four groups, opportunity to transfer had a significant negative relationship with loyalty, and in all cases except low confidence men, opportunity to transfer was the best predictor of loyalty. For low confidence men, family approval was the best predictor of loyalty, and for high confidence men, family approval was the third best predictor of loyalty. For women, family approval was not significantly related

to loyalty. Loyalty was not significantly related to dropout for any of the four groups.

Certainty of Choice. Certainty of choice was not significantly related to dropout for high or low confidence men, and for high confidence women. For low confidence women, certainty of choice had a significant positive relationship to dropout, in a direction contrary to expectations. One would expect students certain of their choice in a school to remain enrolled. For high and low confidence women, certainty of choice had a significant negative relationship to intent to leave. The beta weight of -.314 indicated that this variable was the best predictor of intent to leave for high confidence women, and the third best predictor for low confidence women. For high confidence men, certainty of choice was also the best predictor of intent to leave. Of the 18 significant relationships with certainty of choice in the four path models, 16 of these were due to four variables: courses (significant positive relationships for all four groups) major and occupational certainty (significant positive relationships for all four groups, opportunity to transfer (significant negative relationship for all four groups), and family approval (significant positive relationship for all four groups). Certainty of choice is also best explained of the four attitudinal variables, with an average R^2 of .268.

Contacts with Faculty. Pascarella (1980) stressed the importance of informal contact with faculty in the attrition process. While controlling statistically for the affects of the other variables in the path model, the variable "contact with faculty" was not significantly related to dropout in any of the regressions and was significantly related to intent to leave only for low confidence men. Contact with faculty was significantly related to satisfaction for high confidence men. It was not significantly related to other variables in the path models. The implications for men are as follows: Where confidence

was high, contact with faculty was not an important predictor of intent to leave. As confidence declined, contact with faculty was helpful in reducing intent to leave and, indirectly, dropout. One should recall at this point that the sample in this study was second semester freshmen responding to a questionnaire and their intent to return to school was for the next fall and the next academic year.

University Grades. University grades had a significant negative relationship with dropout in all four groups, and was second in importance to intent to leave in each regression. For low confidence men and women, grades had a significant negative relationship with intent to leave (LCM, B = -.274; LCW, B = -.273); for high confidence men and women, grades were not significantly related to intent to leave (HCM, B = -.109; HCW, B = .191). The implication here was of another interaction effect. When confidence was high, grades did not influence intent to leave significantly. As confidence declined, the importance of grades in reducing intent to leave increased. The variable "grades" was the most important organizational variable in the model.

Centralization. Centralization had a significant positive relationship to dropout for low confidence men, but was not significantly related to dropout for the other groups. This finding for low confidence men was in the predicted direction--the more centralized the organization, the less likely the student to remain.

Memberships in Campus Organizations. Memberships in campus organizations was not significantly related to dropout, intent to leave, or any of the four attitudinal variables for high and low confidence men, and low confidence women. For high confidence women, memberships in campus organizations had a significant negative relationship with the intent to leave, and a significant positive relationship with satisfaction. The B weights for the four groups with intent regressed on memberships were: HCW, B = -.239; LCW, B = -.181; HCM, B = -.083;

LCM, B = -.107. This finding indicated that for women, when confidence was high, memberships in campus organizations were an important reason for being satisfied and remaining in school; as confidence declined, such memberships were no longer significantly related to intent to leave or satisfaction. B weights indicated that memberships were more important for women than for men in reducing intent to leave.

Courses. Courses had a significant positive relationship to dropout for low confidence men, but not for any other groups. For men, this suggested the existence of a cognitive dissonance (Festinger, 1957). In this instance, students who perceived that they had the courses they wanted, but were not confident in their ability to be successful students, were more likely to drop out. The dissonance occurs when a student perceived positively the courses offered, but was not confident about being able to succeed in them. This dissonance could be resolved by the student withdrawing from the situation; in this case, dropping out of school. It is also important to note that for practical value, courses had a positive significant relationship for all four groups. For certainty of choice, the same held true--four significant positive relationships with courses. For satisfaction there were positive significant relationships in the cases of high confidence men, low confidence women, and high confidence women. For loyalty, courses were significant only in the case of high confidence women. These findings suggested that courses, although lacking significant direct effects on dropout or intent to leave in most cases, contributed substantially to the explanation of other variables in the path model and had important indirect effects on the dropout decision.

Academic Program Competitive. The competitiveness of the academic program affected men and women in a substantially different fashion. For men, finding the academic program competitive significantly reduced intent to leave for low

confidence men, but had a positive (but not significant) relationship for intent to leave for high confidence men (LCM, B = -.196; HCM, B = .030). As confidence declined, those men who found the academic program competitive were less likely to leave. This suggests a slightly disordinal interaction between confidence and finding the academic program competitive with intent to leave as the criterion. For both high and low confidence men, those who found the academic program competitive were significantly more likely to believe that their education was of practical value. Finally, high confidence men who found their academic program competitive were more likely to be loyal to the institution than low confidence men (HCM, B = .081; LCM, B = -.005). This finding suggests that when confidence was low, competitiveness was not related to loyalty. As confidence increased, competitiveness became a more important reason for loyalty for men.

For women, the effect of competitiveness was quite different. Finding the academic program competitive significantly reduced intent to leave for high confidence women (B = -.214), but had a positive, but not significant influence on intent to leave for low confidence women (B = .096). This suggests a disordinal interaction. When confidence was high, competitiveness reduced intent to leave. When confidence was low, competitiveness increased intent to leave in a small but not significant manner. The same types of findings were true for practical value and satisfaction. In the case of practical value, when women were confident, competitiveness was likely to increase their perception that their education was of practical value (B = .186). In conditions of low confidence, competitiveness was not significantly related to practical value (B = .049). Secondly, and perhaps more importantly, when confidence was low, the competitiveness of the program significantly reduced one's perception that the program was satisfying (B = .572); whereas when confidence was high, competitiveness had a lesser (and not significant) influence on satisfaction (B = .138).

Absenteeism. Absenteeism affected men and women differently. Absenteeism had a significant positive relationship with dropout for low confidence men (B = .148), but was not significantly related to dropout for high confidence men (B = .016). This suggests that as confidence decreased, absenteeism became more and more important in determining dropout, whereas when confidence was high, absenteeism had little or no influence on dropout. Absenteeism was not significantly related to the attitudinal variables in the model for men. This finding suggests that the placement of absenteeism in the model as an organizational variable may not be appropriate, (see Bean (1981) for a discussion of this problem). For low confidence women, again, absenteeism had a significant positive relationship to dropout (B = .112), but with high confidence, the importance of absenteeism in predicting dropout diminished (B = .029). Thus, confidence could be seen as compensating for absenteeism in influencing dropout decisions. For low confidence women, absenteeism had a significant negative influence on satisfaction (B = -.719), but was not significantly related to satisfaction under conditions of high confidence (B = .018). The importance of absenteeism on influencing satisfaction was again dependent on the level of confidence a woman experienced as a student. For both men and women, any blanket policy on absenteeism fails to take into account the differential influence of absenteeism at varying levels of confidence. Where a student lacks confidence, it is important for that student to attend classes. Where a student is very confident, absenteeism seems to have little or no effect on other behavior. This finding is reinforced by the fact that for high confidence men and women, absenteeism was not significantly related to any other variable in the path model.

Educational Goals. Only in the case of low confidence men were educational goals significantly related to either dropout or intent to leave. For low confidence men, educational goals had a significant negative influence on intent

to leave (B = .236). For high confidence men, such a relationship did not exist (B = .064). This suggests that as confidence decreased, educational goals played an increasingly important part in reducing intent to leave. The direction of the relationship for dropout was the same, although the univariate F-ratio for educational goals for low confidence men was significant at the $p \leq .10$ but not at the $p \leq .05$ level. Educational goals had a significant positive relationship with practical value for all four subpopulations and had a significant positive relationship with loyalty and satisfaction for all groups except low confidence men. Educational goals were not significantly related to certainty of choice in any of the four populations. For men, the higher the level of confidence, the more important the influence of educational goals on satisfaction (LCM, B = .176; HCM, B = .402). Also for men, educational goals had a significant positive influence on loyalty only when the levels of confidence were high.

Major and Occupational Certainty. For both men and women, major and occupational certainty significantly increased intent to leave in conditions of high confidence (HCM, B = .113; HCW, B = .226). This finding was contrary to expectations, but might be explained by the variable itself. In the case of major certainty, one could be quite certain of one's major and intend to leave to transfer to a school which offers better courses in that major. Also, one could be certain of an occupation which does not require a bachelor's degree, thus contributing to one's decision to leave or intend to leave an institution before graduation. Still, the findings for this variable are confusing because greater certainty does not result in reduced intent to leave. For low confidence men, major and occupational certainty is significantly related to dropout (B = .046), but for high confidence men no such relationship exists (B = .013). This finding suggests that for low confidence men, the occupational certainty

portion of this variable is reason enough for them to drop out, viz., they are certain that their occupation will not be among those requiring a bachelor's degree. Major and occupational certainty is significantly related to intent to leave for high confidence men. At this point, the focus of the explanation shifts to one's major and the necessity to transfer to meet the needs of that major. The argument, however, is a weak one. This variable clearly needs further study.

For women, the results were similar. For high confidence women, major and occupational certainty was significantly related to intent to leave, but not for low confidence women. As confidence increased, major and occupational certainty was more likely to lead to intent to leave than when confidence was low. Again, these findings are perplexing. Except in the case of low confidence men, major and occupational certainty had significant positive relationships to both practical value and certainty of choice. In all cases, major and occupational certainty was not significantly related to either satisfaction or loyalty. For men, major and occupational certainty was an important predictor of practical value only when men were confident. As confidence declined, the significance of this relationship also declined.

Opportunity to Transfer. Opportunity to transfer had a significant positive relationship to dropout for high confidence women. Thus, for women, opportunity to transfer only influenced dropout under conditions of high confidence, but was not significantly related to dropout when the student was not confident (HCW, B = .026; LCW, B = .012). For men, opportunity to transfer had a significant positive relationship with intent to leave, but it was not significantly related to intent to leave for low confidence men (HCM, B = .181; LCM, B = .072). For women, the reverse was true: opportunity to transfer had a significant positive relationship to intent to leave for low confidence women, but not for

high confidence women (HCW, B = .028; LCW, B = .195). Opportunity to transfer consistently had negative relationships with the attitudinal variables (all except for the relationship between satisfaction and opportunity to transfer (beta = .010, N.S.). In all other cases, increased opportunity to transfer led to decreased practical value, decreased loyalty, and decreased certainty of choice. For men, opportunity to transfer had a significant positive influence on intent to leave only when confidence was high; a significant negative influence on practical value only when confidence was high; and, a significant negative influence on satisfaction only when confidence was high. This indicates that a student lacking confidence at one institution may lack the confidence to transfer to another. For high and low confidence women, opportunity to transfer had a significant negative relationship to loyalty and to certainty of choice and was not significantly related to practical value or satisfaction.

Family Approval. Family approval was not significantly related to either dropout or intent to leave for any of the four groups. Family approval was significantly related to practical value for low confidence men, but not for high confidence men (HCM, B = .288; LCM, B = .413). This suggests that where confidence was lacking for men, family approval may have led to the belief that the education was of practical value. For women, family approval had a significant positive relationship to practical value regardless of level of confidence (HCW, B = .414; LCW, B = .316). There was no significant relationship between family approval and satisfaction for any of the four groups. There was a significant positive relationship between family approval and loyalty for men, but not for women. Finally, family approval had a significant positive relationship to certainty of choice for all four groups.

Likelihood of Marrying. For men, likelihood of marrying had a significant positive relationship to dropout under conditions of high confidence, but as

confidence declined, likelihood of marrying was was no longer significantly related to dropout. The difference, however, was not a large one (LCM, B = .021; HCM, B = .028). For women, likelihood of marrying was not significantly related to dropout (LCW, B = .030; HCW, B = .019), but the B coefficients indicated that the effects were similar. For men, likelihood of marrying had a significant positive relationship to intent to leave for low confidence men, and a nonsignificant negative relationship to intent to leave for high confidence men. For low confidence women, likelihood of marrying had a significant positive relationship to intent to leave, but the likelihood of marrying was not related to intent to leave at higher confidence levels (LCW, B = .262; HCW, B = .083). The likelihood of marrying was not significantly related to any of the attitudinal variables in the model. This finding suggests that environmental variables may not have a direct influence on attutudes, but influence intent to leave or dropout directly.

Difficulty of Financing School. Findings for this variable run contrary to expectations based on many dropout studies, especially post-mortem studies, where financial difficulties are expected to be the cause or major reason of dropout. This variable was operationalized in this study by the following question: "How difficult has it been for you to secure financing to attend this university?" with foils ranging from "very easy," scored one, to "very difficult," scored five. In this study, responses to this question were not significantly related to dropout, intent to leave, nor the four attitudinal variables. One possible reason for this was that the sample was composed of second semester freshmen already attending school. Their financial difficulties were not perceived as important, even though they may become critical in their next year. The variable was normally distributed, with a mean of 2.820, and a standard deviation of 1.194. In future studies, this variable should be operationalized by some other type of questions such as parental or student income, since

perception of one's financial ability was not related to dropout in the predicted manner.

Three of the four environmental variables (opportunity to transfer, family approval, likelihood of marrying) provided an interesting contribution to the path model. Opportunity to transfer and family approval were the most important of these variables, although the likelihood of marrying was significantly related to intent to leave for low confidence men and women. In contrast, the five background variables (mother's education, father's education, performance, high school and home town size, and distance home) failed to contribute significantly to the understanding of the dropout process when controlling for the environmental, personal, organizational, and attutudinal variables, and intent to leave.

Mother's Education. Mother's education was significantly related to dropout for high confidence men only (HCW, B = -.017; LCW, B = -.031; HCM, B = -.061; LCM, B = .006). Father's education had a significant negative relationship to intent to leave for high and low confidence women, but was not related to either dropout or intent to leave for high or low confidence men (for dropout: HCW, B = .022; LCW, B = -.003; HCM, B = -.010; LCM, B = -.011). The fact that mother's education significantly influences men, and father's education significantly influences women certainly challenges the stereotypical concept of mothers serving as role models for daughters and fathers for sons. Neither the mother's or father's education was significantly related to the attitudinal variables except in the case of high confidence men, where father's education significantly reduced certainty of choice. For high confidence women, where father's education significantly decreased loyalty to the institution. These findings do suggest that, in future studies, mother's education and father's education should be studied as separate variables.

Performance. While controlling for university grades, with which performance had a high multicollinearity (zero-order correlations average .515), performance lost much of its statistical significance in the path model. The paths between performance and university grades, which were not reported in Tables 3 through 6, indicated that performance influenced dropout indirectly through university grades. In the case of high confidence women, performance did have a significant negative relationship with intent to leave. The variable was not significantly related to the attitudinal variables in the path model.

High School and Home Town Size, and Distance Home. For men, high school and home town size and distance home were not significantly related to dropout, intent to leave, or the four attitudinal variables. For women, high school and home town size had a significant negative relationship to dropout for high confidence women. This indicated that as high school and home town size increased, the negative relationship to dropout was significant only under conditions of high confidence for women. When confidence was low, high school and home town size failed to have a significant influence on dropout. For low confidence women, distance home had a significant positive relationship with intent to leave, a significance which disappeared when confidence was high. Thus, students from larger high schools should drop out at a lower rate when confidence is high. The influence of distance home on intent to leave was significant only when confidence was low. For women, neither of these background variables was significantly related to the four attitudinal variables.

Findings for the background variables are somewhat surprising considering the work of Sewell and Hauser (1976). The importance of these variables may not show up after students have matriculated. The sample that status attainment researchers use will have gone through a major division, with one group matriculating and the second group choosing not to matriculate. It is the

self-selected matriculation group in which mother's and father's education must be significantly related to dropout. The distribution of their parents' education is likely to be skewed towards the higher end of the educational scale as compared to students who fail to matriculate, with less variance within the matriculated group. Background characteristics presumably influence dropout decisions less because the self-selected population is probably more homogenous across these characteristics than the population at large. As a group of variables, however, their influence is not great, and where parsimony is needed, the exclusion of this class of variables may be advisable.

Discussion of Intent to Leave and Confidence

Intent to Leave. As predicted from the model of Fishbein and Ajzen (1975) the intent variable was an important intervening variable subsuming much of the variance between the attitudinal variables and the behavior in question, in this case, dropout. Intent to leave was consistently the best predictor of dropout for these four populations and was reasonably well explained by the variables which preceded it in the model (the $\bar{R}^2$ ranged from .252 to .431). Suggestions that this finding may not be valid are challenged by the fact that for each of four separate groups, the same variable was most important.

Intent to leave is important for practical reasons. Because it is a good predictor of actual withdrawal behavior and because it can be assessed before a student leaves an institution, intent to leave should be of enormous practical value to institutions which wish to intervene in the dropout process. Counselors or advisors could reach potential dropouts well before they actually leave an institution.

Confidence. The author is aware of no other study where confidence has played a significant part in a description of student behavior. Although much has been written about competence (e.g., grades), little has been written about

confidence. It is clear from the number of interactions based on confidence in the path model that this variable has much to contribute to the understanding of student behavior, especially in the dropout process. Its exclusion from previous studies is somewhat puzzling, but like intentions, it may have been overlooked because its influence is simple and direct: one would expect confident students to perform better than nonconfident ones, much in the way that intention is a self-fulfilling prophecy of behavior.

Another study by the author (Bean and Griffin, unpublished manuscript) indicates that two important precursors of confidence are satisfaction and competence. For men, competence seems to be the better predictor of confidence than satisfaction; for women, satisfaction and competence seem about equal in importance. Clearly, more work needs to be done in this area. Based on the current study, one can say that confidence appears important in compensating for areas in which the student may have shortcomings, especially grades and absenteeism.

Future Research

Although this paper has begun to examine some of the interrelationships in a complex set of variables tied together by a theoretical longitudinal model, the task of understanding student attrition has not abruptly halted. To begin with, it should be remembered that the sample used in this study was biased towards the higher ability student and was drawn from a single institution at a single time. Although many of the findings were consistent with earlier studies (Bean, 1980; Bean and Creswell, 1980); all were not. Thus, future research should include: 1) studies of more than one institution; 2) studies of more than one grade level; 3) studies of interaction terms within the model; and 4) attempts to develop a more parsimonious model of the attrition proces. On the basis of a single study, one should not exclude from further

study any large number of variables. The contingency approach may ultimately be the only satisfactory one. The variables which may be associated with dropout at one institution may differ considerably from those associated with another institution, thereby causing serious problems with the generalizability of results. The findings for the path models presented in Tables 3, 4, 5, and 6 demonstrate that most of the significant relationships are in accordance with the theoretical model. In the theoretical model, background variables are expected to influence personal, environmental, and organizational variables; personal, environmental, and organizational variables are expected to influence attitudinal variables; attitudinal variables are expected to influence intent; and intent is expected to have the largest direct influence on the decision to stay in or drop out of school.

It may no longer be wise to separate the "personal" variables of confidence, educational goals, and major and occupational certainty from the attitudinal variables, since the "personal" variables would seem to be largely a product of an outcome of the interaction with the organization, assuming that the measures were taken well into the freshman year. For this reason, these two sets of variables may be collapsed into the single category of outcomes and attitudinal variables, located where the attitudinal variables are in the model presented here. Finally, the number of interaction terms investigated in this study was rather small. As demonstrated by confidence, interactions can clearly have a significant influence in our understanding of the dropout process. The study of interaction terms in dropout studies was suggested by Astin (1971) and seems to be as true now as it was then, although interaction effects have received relatively little study in research on attrition. (See Pascarella and Terenzini (in press) for a notable exception.) It does seem advisable to continue using complex arrays of variables, since the influence of certain types of variables by

themselves is much different than their influence in the context of other sets of variables in the path model.

Practical Implications

The separation of the population used in this study into men and women is a meaningful and an obvious distinction. The separation into high and low confidence students, although meaningful, is certainly not intuitive, and is not based on structural characteristics (e.g., characteristics which can be manipulated by the organization). The findings related to confidence, if they are to affect decision-making related to student attrition, must be interpretable by the faculty and staff. Other research (Bean and Griffin, unpublished manuscript) suggests that competence and satisfaction, which may be more apparent to observers, are significantly related to confidence--more so than any other variables in this study. For practical purposes, confident students may generally be considered those who do better academically, and are more satisfied with their work. Since university grades are generally available, many of the conclusions about the interactions based on competence may be generalized to a certain extent to conclusions based on competence. The explanation of confidence bears further research.

Despite these shortcomings, based on this study, one can conclude that attrition would likely be reduced using the procedures listed below.

1. Admit students with high standardized test scores and high school grades.

Students who perform better in high school and on standardized tests usually have higher university grade point averages, and are less likely to drop out of school. Although this should come as a surprise to no one, if an institution is able to raise the academic standards of its freshman students, the payoffs may not only be in better quality teaching and learning, but in fewer students leaving the institution.

2. Identify for students (and prospective students) the usefulness of their education later for employemnt.

Students who believe that their education will be of practical value, that is, of use in getting a job, are less likely to drop out of school. Recruitment and advising programs should stress the underlying potential value of a degree for future employment. Although this reason may be transient, the influence of practical value on reducing intent to leave is clear from two other studies (Bean, 1980; Bean and Creswell, 1980), and its importance for this generation of students is probably quite real. It is important to recognize that creating a vocational curriculum may not be the answer to this problem. Instead, explaining to students the practical value of liberal education may be a more valuable exercise than trying to force students into narrow, vocational, technical careers at the outset. Failing to recognize the practical importance of one's education seems to be one of the major contributing factors in students leaving school.

3. Create strict absenteeism policies, and make sure that these are enforced for low confidence/ability students.

Absenteeism is positively related to attrition for low confidence men and women. To the extent that low confidence is related to low grades, one might generalize from this finding that students who are doing poorly are those toward whom any attendance policy should be directed. Men and women who lack confidence in their ability to be successful students should be required to attend classes, whereas attendance policies for students who are doing well, or think they are doing well, may in fact be much less important. A universal attendance policy, which is probably mandated so that certain students are not identified and therefore stigmatized, may have differential effects--little effect on good students, some positive effects on marginal students. Reducing absenteeism, however, may be treating the symptom and not the cause.

4. Create or maintain courses and co-curricular activities from which students derive satisfaction.

Programs which increase a student's satisfaction with the institution seem to be of value in retaining students. Satisfaction significantly reduces intent to leave for all except high confidence women. For both men and women, providing a curriculum which the students want seems to be one of the main reasons for satisfaction, and certainly if the student could not find any courses he or she wanted to take, the chances of enjoying the school experience would be slim. The variable courses not only increases satisfaction, but also practical value, loyalty, and certainty of choice. Thus, the affective and cognitive aspects of courses have many important indirect effects, and the selling of the curriculum to students may be important for institutional survival.

5. Maintain or create programs which increase a student's loyalty to the institution.

Loyalty significantly reduces intent to leave for all except low confidence men. Advising programs, programs for parents of students, co-curricular programs, and programs for high school students which instill a sense of organizational loyalty may produce benefits in terms of reducing dropout.

6. Allow students to participate in the decision-making process.

Centralization represents the failure of students to be allowed to participate in decision making at the institutional level. Allowing students to participate, especially those of the category of low confidence men, may reduce attrition for this group, and would not seem to increase attrition in any of the other groups.

7. Encourage or require students, especially women, to participate in co-curricular activities.

Memberships in campus organizations reduce intent to leave and increase satisfaction for high confidence women. This finding is similar to that for previous studies (Bean, 1980; Bean and Creswell, 1980). Requiring memberships would seem to be beneficial to the institution in reducing freshman attrition for women.

8. Maintain or create outreach programs for parents of students.

Family approval of the institution produces positive effects in all of its significant relationships to the attitudinal variables or intent to leave. Various outreach programs to parents or students of prospective students which improve parental approval of the institution seems well advised.

9. Do not encourage students to marry while in college.

Although an institution may not be in a position to encourage or discourage marrying, students who reported that they were likely to marry were found to be more likely to intend to leave or to actually leave the institution. For high confidence men, the relationship is significant for dropout, but it would seem outlandish for a major university to come out with a campaign to prevent students from marrying.

10. Recruit students whose parents are well educated.

The findings from this study were less than uniform for the four groups. Where significant relationships existed, a higher level of mother's education or father's education led to lower levels of dropout or intent to leave. All other things being equal, selecting students from better educated families is likely to reduce attrition. Recruiting children of alumni is a logical place to start.

11. Recruit students from larger high schools near the institution.

Findings for high school size and home town size and distance home are also less than absolute. For high confidence women, coming from a larger home town and high school had a significant negative relationship with dropout. This relationship did not exist for any of the other groups. Distance home had a significant positive relationship with intent to leave for low confidence women. These findings, although predicted for the entire group, were true only for part of the group. Thus, to preferentially select students from nearby towns with large high schools is not well justified, although in the case of women, some such policy may be beneficial.

Few public universities are likely to be in a position to engage in a great deal of selective recruiting, and therefore, it may not be possible to act on some of these practical suggestions. If one had a free hand to create an environment at a university which would lead to lower attrition rates, several factors should be considered. An institution would be advised to:

1. Provide an education of practical value
2. Provide programs which satisfy students
3. Increase the loyalty of students
4. Increase the students' certainty of their choice in attending the institution
5. Select students with high grades
6. Allow students to participate in decision making on campus
7. Encourage women to join campus organizations
8. Provide courses the students believe they want to take
9. Provide a competitive academic program
10. Enforce policies against absenteeism, especially for low confidence/ability students
11. Provide the means by which students are able to establish realistic and clear educational goals

12. Provide programs which increase family approval of the institution

13. Select students whose parents reached relatively higher educational levels.

Notes:

1. Voluntary and involuntary dropouts were not separated in this study although Tinto (1975), Price (1977) and Pascarella (1980) have all argued that this separation is desirable. Expelled students were not excluded because the author did not have access to such information from student records. There may be equally good reasons to leave these students in the study. First, it can be argued that for the most part, dismissed students represent failures to socialize students into student roles, not mental deficiencies. Second, using voluntary dropouts would exclude extreme values for university grades, and thus represent a loss of information. If GPA is an important variable, the institution, through its grading policies, is determining the range of GPA that can be considered in a study. Third, it seems hardly justifiable to make a distinction between the student who is dismissed for low grades and the one who leaves of his or her own volition, with grades only slightly higher--one who is encouraged by faculty or staff to leave, although is not expelled. If ability, and not motivation, was the only question, then high school grades should be much better predictors of attrition than they are typically. Finally, the point is largely moot since the average number of freshmen suspended from thisuniversity between the end of the freshman year and the beginning of the sophomore year due to grades averages only 2 to 3% which is a relatively small contamination of the population, especially when one considers that the sample in this study is biased toward higher ability students.

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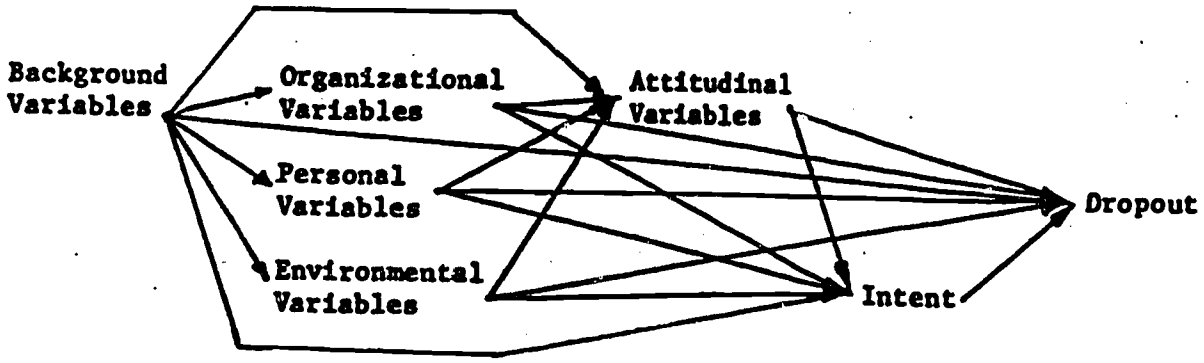

Figure 1. Causal Sequence of the Variables Affecting Dropout

TABLE 1 DEFINITION OF THE VARIABLES

Variable	Definition
Dropout	The cessation of enrollment of a student from the institution
Intent to Leave	Expectation of returning to campus next fall, and next year
ATTITUDINAL VARIABLES	
Practical Value	Usefulness of one's education for getting a job
Satisfaction	Satisfaction with being a student
Loyalty	The importance of graduating from this institution, not another
Certainty of Choice	The degree to which the student is certain that this institution is the right choice
ORGANIZATIONAL VARIABLES	
Contacts with Faculty	The number of contacts with faculty outside of the classroom
Grades	University grade point average
Centralization	The degree to which the student perceives lack of participation in rule-making processes
Memberships in Campus Organizations	The number of memberships in campus organizations
Courses	Having available the courses one wants to take
Academic Program Competitive	Finding the academic program difficult and competitive
Absenteeism	Number of unexcused absences
PERSONAL VARIABLES	
Educational Goals	The importance to the student of finishing a Bachelor's degree
Major and Occupational Certainty	The degree to which one is certain of one's choice of a major and of an occupation
Confidence	Confidence in one's ability to be a successful student at the University
ENVIRONMENTAL VARIABLES	
Opportunity to Transfer	Opportunity to transfer to another institution
Family Approval (Institution)	Family approval of the student's attending this institution
Likelihood of Marrying	The likelihood of a student's marrying before graduation
Difficulty of Financing School	The difficulty of securing money to pay for one's schooling costs
BACKGROUND VARIABLES	
Mother's Education	Mother's level of educational attainment
Father's Education	Father's level of educational attainment
Performance	High school grades and ACT composite scores
High School and Home town Size	Size of home town and high school where the student attended
Distance Home	Distance to a student's parents' home

Table 2

Measurement of the Variables

Variable Name	# of Items Used	Factor Loading	Coefficient Alpha	Range Low Values	Range High Values	Mean	SD	Missing Cases
Intent to Leave	2	.89, .94	.96	2	12	3.735	2.564	6
INTERVENING VARIABLES								
Practical Value	2	.81, .74	.91	2	10	7.734	2.003	3
Satisfaction	4	.80, .82, .73, .62	.87	4	20	14.897	3.081	6
Loyalty	1	--	--	1	5	2.880	.914	4
Certainty of Choice	1	--	--	1	5	3.440	1.048	5
ORGANIZATIONAL VARIABLES								
Contacts with Faculty	1	--	--	1	5	2.413	1.032	3
Grades	1	--	--	1	7	5.530	1.377	7
Centralization	2	.69, .71	.70	2	10	8.164	1.549	11
Memberships in Campus Organiz.'s	1	--	--	1 (=None)	5 (=4 or More)	1.723	.955	2
Courses	1	--	--	1	5	3.748	.803	3
Academic Program Competitive	2	.76, .79	.77	2	10	7.015	1.460	8
Absenteeism	1	--	--	1 (=None)	5	1.526	.841	60
PERSONAL VARIABLES								
Educational Goals	2	.69, .70	.86	2	10	8.144	1.828	2
Major and Occupational Certainty	2	.82, .83	.87	2	10	7.001	2.273	5
Confidence	1	--	--	1	5	3.714	.919	16
ENVIRONMENTAL VARIABLES								
Opportunity to Transfer	2	.78, .77	.80	2	10	6.692	2.065	4
Family Approval	1	--	--	1	5	4.359	.708	7
Likelihood of Marrying	2	.65, .69	.66	2	10	3.939	1.984	8
Difficulty of Financing School	1	--	--	1	5	2.820	1.194	6
BACKGROUND VARIABLES								
Mother's Education	1	--	--	1	5	3.881	1.146	6
Father's Education	1	--	--	1	5	4.015	1.373	5
Performance (H.S. Grades & ACT Scores)	2	.65, .48	.58	4	11	9.440	1.396	55
High School and Home Town Size	2	.75, .78	.87	4	12	7.361	3.252	72
Distance Home	1	--	--	1=0 to 49 Miles	5=500 or more miles	2.142	1.069	0
DEPENDENT VARIABLE (Data from Registration Tapes)								
Dropout	--	--	--	2=dropped fall 1979	1=dropped winter, 1980	.313	.694	45 (Includes Stopouts)
				0=still enrolled, winter 1980				

Dropouts: Enrolled through Spring 1980=1253 (81.9%); Dropped Spring, 1980=73 (4.6%); Dropped Fall 1979=203 (12.9%); 45 cases missing

N=1,574

Table 3. RESULTS FOR REGRESSIONS FOR THE PATH MODEL[a] FOR HIGH CONFIDENCE WOMEN

INDEPENDENT VARIABLES	Dependent Variables: DROPOUT		INTENT TO LEAVE		PRACTICAL VALUE		SATISFACTION		LOYALTY		CERTAINTY OF CHOICE	
	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B
Intent	.692***	.172										
(A)[b]Practical Value	.011	.004	-.150***	-.225								
(A)Satisfaction	-.059	-.016	.024	.026								
(A)Loyalty	.073	.053	-.285***	-.832								
(A)Certainty of Choice	.010	.006	-.314***	-.831								
(O)Contacts with Faculty	.039	.026	.002	.005	-.033	-.060	.071	.177	.020	.019	-.045	-.045
(O)Grades	-.132***	-.083	.075	.191	-.056	-.094	-.005	-.013	-.016	-.014	-.050	-.048
(O)Centralization	-.033	-.015	.015	.027	-.013	-.016	-.061	-.102	-.104*	-.065	-.082*	-.056
(O)Memberships in Campus Orgs.	.009	.005	-.095*	-.239	.060	.101	.114*	.265	.058	.050	.055	.053
(O)Courses	.013	.012	.099*	.371	.212***	.526	.157**	.541	.123**	.157	.233***	.328
(O)Academic Prog. Competitive	-.024	-.011	-.119**	-.21[illegible]	.156***	.186	-.083	-.138	.022	.014	.013	.009
(O)Absenteeism	.031	.029	.009	.032	.030	.076	.005	.018	.078	.101	-.024	-.034
(P)Educational Goals	.035	.013	-.083	.124	.097*	.097	.175***	.242	.124**	.063	.016	.009
(P)Major and Occupational Certainty	.044	.013	.186***	.226	.163***	.132	-.020	-.022	.078	.032	.261***	.119
(E)Opportunity to transfer	.076*	.026	.020	.028	-.047	-.043	-.077	-.099	-.348***	-.165	-.203***	-.106
(E)Family Approval	.047	.045	.048	.185	.160***	.414	.017	.060	.023	.031	.172***	.252
(E)Likelihood of Marrying	.059	.019	.065	.083	.052	.044	-.078	-.092	.039	.017	.075	.036
(E)Difficulty of Financing School	-.039	-.022	-.007	-.017	.017	.026	-.001	-.003	-.016	-.012	-.048	-.041
(B)Mother's Education	-.027	-.017	.047	.116	-.032	-.054	-.039	-.089	-.016	-.013	.017	.016
(B)Father's Education	.045	.022	-.094*	-.187	-.022	-.030	-.024	-.045	-.107*	-.073	-.037	-.027
(B)Performance	-.005	-.003	-.110*	-.240	-.053	-.077	-.018	-.037	-.007	-.005	.032	.027
(B)High School and Home Town Size	-.078*	-.009	-.068	-.033	.011	.004	.028	.012	.068	.011	-.016	-.003
(B)Distance Home	.057	.037	.059	.152	.006	.010	.045	.107	.017	.015	.024	.023
(Constant)		2.082		8.052		2.749		14.512		3.060		1.491
R^2	.525		.372		.221		.115		.251		.302	
$\bar{R}^2$	.501		.342		.190		.080		.222		.275	

N = 477 *p ≤ .05 **p ≤ .01 ***p ≤ .001

[a]Omits paths from the background variables to the (O), (P), or (E) variables.

[b]Variable types: (A) Attitudinal, (O) Organizational, (P) Personal, (E) Environmental, (B) Background.

Table 4. RESULTS FOR REGRESSIONS FOR THE PATH MODEL[b] FOR LOW CONFIDENCE WOMEN

INDEPENDENT VARIABLES	Dependent Variables: DROPOUT Beta	DROPOUT B	INTENT TO LEAVE Beta	INTENT TO LEAVE B	PRACTICAL VALUE Beta	PRACTICAL VALUE B	SATISFACTION Beta	SATISFACTION B	LOYALTY Beta	LOYALTY B	CERTAINTY OF CHOICE Beta	CERTAINTY OF CHOICE B
Intent	.555***	.156										
(A)[a]Practical Value	-.024	-.009	-.257***	-.338								
(A)Satisfaction	-.054	-.013	-.119*	-.105								
(A)Loyalty	.002	.002	-.172***	-.547								
(A)Certainty of Choice	.178*	.084	-.176**	-.442								
(O)Contacts with Faculty	.028	.023	-.004	-.011	-.012	-.026	.079	.262	-.030	-.028	.005	.006
(O)Grades	-.152**	-.082	-.142*	-.273	.045	.066	.042	.090	-.057	-.034	.037	.028
(O)Centralization	.051	.024	.033	.053	-.072	-.089	-.060	-.111	-.107	-.055	-.064	-.042
(O)Memberships in Campus Orgs.	-.011	-.010	-.058	-.181	.062	.146	.056	.196	.036	.035	.049	.060
(O)Courses	.019	.002	.051	.187	.260***	.725	.210***	.873	.083	.096	.238***	.348
(O)Academic Program Competitive	-.024	-.013	.049	.096	.033	.049	-.260***	-.572	.006	.004	-.049	-.038
(O)Absenteeism	.126**	.112	.010	.032	-.026	-.062	-.201***	-.719	-.024	-.028	-.101	-.127
(P)Educational Goals	.034	.015	-.028	-.045	.244***	.294	.167**	.300	.137*	.069	.058	.037
(P)Major and Occupational Certainty	-.011	-.003	.067	.075	.109*	.093	-.009	-.011	.053	.019	.265***	.119
(E)Opportunity to Transfer	.029	.012	.132**	.195	-.065	-.072	.010	.016	-.176**	-.081	-.119***	-.117
(E)Family Approval	.005	.005	-.047	-.191	.103*	.316	.069	.316	.110	.140	.153**	.246
(E)Likelihood of Marrying	.079	.030	.194***	.262	.021	.021	.031	.047	-.057	-.024	.064	.034
(E)Difficulty of Financing School	-.013	-.008	-.022	-.049	-.056	-.098	-.040	-.105	.089	.014	.003	.003
(B)Mother's Education	-.049	-.031	.059	.133	.045	.077	.014	.035	-.001	-.001	.100	.089
(B)Father's Education	-.006	-.003	-.099*	-.198	.012	.018	.004	.009	-.019	-.012	.040	.032
(B)Performance	.014	.008	-.012	-.025	.114	.175	-.042	-.097	.108	.069	-.029	-.023
(B)High School and Home Town Size	-.049	-.008	-.007	-.004	-.029	-.012	.078	.049	.009	.002	.054	.012
(B)Distance Home	.062	.044	.094*	.240	-.062	-.121	-.038	-.111	.039	.032	-.042	-.043
(Constant)		1.661		7.628		-.680		12.678		1.835		.869
R^2	.470		.469		.290		.235		.135		.326	
$\bar{R}^2$	.430		.431		.249		.191		.085		.287	

N = 330 $^{*}p \leq .05$ $^{**}p \leq .01$ $^{***}p \leq .001$

[a]Variable types: (A)Attitudinal (O)Organizational (P)Personal (E)Environmental (B)Background

[b]Omit paths from the background variable to the (O), (P) or (E) variables.

Table 5. RESULTS FOR REGRESSIONS FOR THE PATH MODEL[b] FOR HIGH CONFIDENCE MEN

Dependent Variables

INDEPENDENT VARIABLES	DROPOUT		INTENT TO LEAVE		PRACTICAL VALUE		SATISFACTION		LOYALTY		CERTAINTY OF CHOICE	
	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B
Intent	.567***	.150										
(A)[a]Practical Value	.031	.009	-.164***	-.185								
(A)Satisfaction	.090*	.019	-.123**	-.098								
(A)Loyalty	-.043	-.027	-.113*	-.268								
(A)Certainty of Choice	.035	.020	-.214***	-.464								
(O)Contacts with Faculty	-.071	-.039	.080	.167	-.027	-.050	.130**	.341	-.015	-.013	-.024	-.023
(O)Grades	-.290***	-.129	-.065	-.109	-.041	-.061	-.035	-.073	-.066	-.047	-.063	-.048
(O)Centralization	.059	.023	-.092*	-.133	-.079	-.101	-.057	-.103	.023	.014	-.043	-.029
(O)Memberships in Campus Orgs.	.030	.019	-.035	-.083	-.007	-.015	.030	.089	.023	.023	.037	.042
(O)Courses	-.053	-.039	-.089	-.245	.225***	.550	.121*	.419	.053	.061	.219***	.278
(O)Academic Program Competitive	-.033	-.014	.087	.030	.110*	.157	.012	.025	.119*	.081	.008	.006
(O)Absenteeism	.024	.016	-.026	-.064	.048	.108	-.034	-.107	.059	.063	.024	.028
(P)Educational Goals	.035	.014	.044	.064	.180***	.224	.219***	.402	.155**	.096	.067	.045
(P)Major and Occupational Certainty	.044	.013	.105*	.113	.137**	.130	.056	.075	-.012	-.006	.264***	.131
(E)Opportunity to Transfer	.033	.010	.163***	.181	-.168***	-.165	-.123**	-.171	-.216***	-.101	-.139**	-.071
(E)Family Approval	.071	.069	-.009	-.028	.074	.288	.037	.149	.140**	.189	.213***	.313
(E)Likelihood of Marrying	.082*	.028	-.065	-.083	-.057	-.064	-.027	-.044	.018	.010	-.004	-.002
(E)Difficulty of Financing School	-.003	-.001	.036	.068	.054	.089	-.055	-.129	-.001	-.001	.071	.062
(B)Mother's Education	-.115**	-.061	.012	.025	-.026	-.047	.027	.067	-.024	-.020	-.061	-.056
(B)Father's Education	.023	-.010	-.089	-.115	-.019	-.028	.005	.011	-.097	-.067	-.113*	-.085
(B)Performance	.032	.014	-.068	-.114	-.077	-.114	.000	.000	-.061	-.043	-.055	-.042
(B)High School and Home Town Size	.019	.002	-.060	-.021	.073	.023	.025	.011	-.007	-.001	-.052	-.008
(B)Distance Home	-.005	-.003	.054	.114	-.054	-.099	-.028	-.074	.007	.006	-.010	-.010
(Constant)		1.723		7.948		4.710		10.494		1.898		1.434
R^2	.429		.290		.250		.144		.164		.314	
$\bar{R}^2$	.396		.252		.217		.106		.127		.284	

N = 429 *p $\leq$ .05 **p $\leq$ .01 ***p $\leq$ .001

[a]Variable types: (A)Attitudinal (O)Organizational (P)Personal (E)Environmental (B)Background

[b]Omits paths from the background variables to the (O), (P), or (E) variables.

Table 6. RESULTS FOR REGRESSIONS FOR THE PATH MODEL[b] FOR LOW CONFIDENCE MEN

Dependent Variables

INDEPENDENT VARIABLES	DROPOUT		INTENT TO LEAVE		PRACTICAL VALUE		SATISFACTION		LOYALTY		CERTAINTY OF CHOICE	
	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta	B
Intent	.441***	.141										
(A)[a]Practical Value	-.008	-.003	-.296***	-.332								
(A)Satisfaction	.105	.025	-.152**	-.113								
(A)Loyalty	-.003	-.003	-.012	-.033								
(A)Certainty of Choice	-.089	-.069	-.118	-.287								
(O)Contacts with Faculty	-.077	-.055	-.111*	-.250	-.113	-.228	.037	.110	.018	.015	-.059	-.054
(O)Grades	-.277***	-.154	-.158*	-.274	.056	.087	.016	.036	-.081	-.051	.113	.087
(O)Centralization	.117*	.060	.055	.089	-.128*	-.184	-.057	-.124	-.069	-.041	-.124	-.082
(O)Memberships in Campus Orgs.	.060	.069	-.029	-.107	-.009	-.030	-.025	-.123	.066	.088	-.015	-.022
(O)Courses	.154*	.140	.000	.000	.171*	.434	.113	.432	-.027	-.028	.230***	.269
(O)Academic Program Competitive	-.011	-.006	-.123*	-.196	.156*	.222	-.075	-.160	-.008	-.005	.021	.013
(O)Absenteeism	.183**	.148	-.055	-.139	-.067	-.150	-.035	-.120	.100	.093	.014	.014
(P)Educational Goals	-.100	-.049	-.152*	-.236	.272***	.377	.085	.176	.147	.083	.071	.045
(P)Major and Occupational Certainty	.130*	.046	-.025	-.028	.113	.113	.053	.079	.067	.027	.213**	.098
(E)Opportunity to Transfer	-.106	-.041	.060	.072	-.035	-.038	-.040	-.065	-.150*	-.066	-.218***	-.108
(E)Family Approval	-.048	-.048	-.067	-.210	.148*	.413	-.027	-.112	.221**	.252	.144*	.184
(E)Likelihood of Marrying	.052	.021	.134*	.167	.043	.048	.036	.060	-.015	-.007	-.012	-.006
(E)Difficulty of Financing School	-.094	-.062	-.046	-.095	.039	.073	-.070	-.195	-.069	-.052	-.023	-.019
(B)Mother's Education	.010	.006	-.035	-.070	.012	.022	.037	.097	-.074	-.053	.002	.001
(B)Father's Education	-.020	-.011	.014	.024	.025	.039	-.036	-.084	-.033	-.021	-.071	-.051
(B)Performance	.051	.027	-.047	-.079	-.026	-.039	-.112	-.249	.048	.029	-.117	-.080
(B)High School and Home Town Size	-.028	-.004	.084	.034	-.022	-.008	.021	.012	-.007	-.001	-.060	-.010
(B)Distance Home	-.030	-.021	.104	.231	-.006	-.013	.034	.102	-.022	-.018	.016	.015
(Constant)		1.743		12.393		.929		15.077		2.083		2.636
R^2	.487		.481		.294		.069		.158		.293	
$\bar{R}^2$	.423		.420		.227		-.019		.078		.226	

N = 207 $^{*}p \leq .05$ $^{**}p \leq .01$ $^{***}p \leq .001$

[a]Variable types: (A)Attitudinal (O)Organizational (P)Personal (E)Environmental (B)Background

[b]Omits paths from the background variables to the (O), (P), or (E) variables.